

REMARKS

Applicant thanks the Examiner for the thorough consideration given the present application. Claims 13 and 14 were previously cancelled without prejudice to or disclaimer of the subject matter contained therein. Claims 1-12 and 15 are pending. Claims 1, 7, and 15 are amended. Claims 1, 7 and 15 are independent. The Examiner is respectfully requested to reconsider the rejections in view of the amendments and remarks set forth herein.

Reasons for Entry of Amendments

At the outset, it is respectfully requested that this Amendment be entered into the Official File in view of the fact that the amendments to the claims automatically place the application in condition for allowance.

In the alternative, if the Examiner does not agree that this application is in condition for allowance, it is respectfully requested that this Amendment be entered for the purpose of appeal. This Amendment reduces the issues on appeal by placing the claims in compliance with 35 U.S.C. § 112, second paragraph. This Amendment was not presented at an earlier date in view of the fact that Applicant did not fully appreciate the Examiner's position until the Final Office Action was reviewed.

Allowable Subject Matter

The Examiner states that dependent claim 11 would be allowable if rewritten in independent form to include the subject matter of the base claim and any intervening claims, and to overcome the rejections under 35 U.S.C. 112, second paragraph; and that

independent claim 15 would be allowable if rewritten to overcome the rejections under 35 U.S.C. 112, second paragraph.

In response, each of independent claim 1 and 7 has been amended to include a combination of features not taught or suggested by the references cited by the Examiner, and

independent claim 15 has been amended to overcome the rejections under 35 U.S.C. 112, second paragraph.

Therefore, independent claims 1, 7, and 15 are in condition for allowance.

Examiner Interview

If, during further examination of the present application, a discussion with the Applicant's Representative would advance the prosecution of the present application, the Examiner is encouraged to contact Carl T. Thomsen (Registration No, 50,786) at 1-703-208-4030 (direct line) at his convenience.

Amendments to the Specification

Paragraphs [0047], [0048], and [0057] of Published Patent Application No. 2007/0092158 have been amended merely to place them in better form. No new matter has been added.

Rejection Under 35 U.S.C. § 112, second paragraph

Claims 1-12 and 15 stand rejected under 35 U.S.C. § 112, second paragraph. This rejection is respectfully traversed.

The Examiner has set forth certain instances wherein the claim language is not clearly understood.

In order to overcome this rejection, the Applicant has amended claims 1, 7, and 15 to correct each of the deficiencies specifically pointed out by the Examiner. The Applicant respectfully submits that the claims, as amended, particularly point out and distinctly claim the subject matter which the Applicant regards as the invention. Accordingly, reconsideration and withdrawal of this rejection are respectfully requested.

Rejections Under 35 U.S.C. § 103(a)

Claims 1-4, 6-10, and 12 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Martins (U.S. Patent 6,950,123), in view of Averbuch et al. (U.S. Patent 7,085,401).

This rejection is respectfully traversed.

Amendments to Independent Claims 1 and 7

While not conceding the appropriateness of the Examiner's rejection, but merely to advance the prosecution of the present application, each of independent claims 1 and 7 has been amended, respectively, to recite a combination of method steps (or apparatus), for eliminating an individual line segment from a moving image object in one image comprising effective or ineffective pixels, the line segment being part of a line-shaped image object which overlaps the moving image object, including *inter alia*

“... selectively extracting the individual line segment from the line-shaped image

object;

... enlarging the individual line segment to a line width of three pixels and eliminating the individual line segment from the moving image object;

... scanning a vicinity region of the individual line segment on the moving image object and sequentially extracting pixels to be scanned;

... determining whether or not the extracted pixels to be scanned are the effective pixels; and

... dropping a perpendicular from the pixels to be scanned that are determined to be the effective pixels at the effective pixel determination step to a nearest line segment and setting each individual pixel on the perpendicular as the effective pixels.”

For support, see for example, paragraphs [0047] to [0052] and [0056], and FIGS. 3 and 4 of the present application as published in U.S. Patent Publication No. 2007/0092158, which clearly disclose “enlarging the individual line segment to a line width of three pixels and eliminating an individual line segment from a line-shaped image object,” and

paragraphs [0065] to [0067] and FIG. 6 of the present application as published in U.S. Patent Publication No. 2007/0092158, which clearly disclose “dropping a perpendicular from the pixels to be scanned that are determined to be the effective pixels at the effective pixel determination step to a nearest line segment and setting each individual pixel on the perpendicular as the effective pixels.”

In contrast to the present invention, nowhere in the Martins document is there any hint of “enlarging the individual line segment to a line width of three pixels” during the elimination step, as presently claimed.

The Martins document merely discloses “when eliminating line-shaped image object from the entire image including moving objects, the line-shaped image object means a field area bounded by multiple line segments (for example, a quadrangle, triangle...) ”

In other words, Martins teaches eliminating an entire field area of shaped image objects bounded by the multiple line segments, whereas the present invention ONLY eliminates an individual line segment, and does NOT eliminate any of the area adjacent to the individual line segment.

With the present invention, pixel interpolation is easier and is highly reproducible than with the method of Martins, because the present invention selectively eliminates an individual line segment. By contrast, the Martins method eliminates an entire field area bounded by multiple line segments of a line-shaped image. Thus, because the entire field area of the line-shaped image is eliminated, Martins has a wasted area in the image.

In view of the above, Martins cannot teach or suggest the present invention as set forth in each of independent claims 1 and 7.

Averbuch et al. (U.S. Patent 7,085,401 B2) teach the interpolation method of eliminated line-shaped image object which regards the interpolation as each polygon, and draws a line between the corner of the polygon and the closest pixel which is located in the outside and the clockwise direction from the polygon. Therefore, the method of the

interpolation is generally complicated and is marked with low accuracy; namely, the method results in a difference in the distance and the direction of the interpolation.

On the other hand, the interpolation method in the pending patent application draws a perpendicular line between the target pixel and the nearest segment; hence, the distance of the interpolation is shortest. As a result, the claimed method is able to make effective pixels homogeneous, and is able to interpolate the image without damaging the non-target pixels.

In addition, as previously argued, in Averbuch et al. (U.S. Patent 7,085,401 B2), the object in the binary image has a bounding contour composed of polygons that may have missing pixels. As for the procedure to fill the missing pixels, the Averbuch et al. document merely discloses selecting the lowest real point on the polygon that was derived in the previous step, and taking the perpendicular line of the lowest pixel. Then Averbuch et al. draw line after line in a clockwise direction until they hit another existing pixel on the polygon (Column 26).

Thus, Averbuch et al. cannot make up for the deficiency of Martins to teach or suggest the present invention.

At least for the reasons explained above, the Applicant respectfully submits that the combination of features set forth in each of independent claims 1 and 7 is not disclosed or made obvious by the prior art of record, including Martins and Averbuch et al.

Therefore, independent claims 1 and 7 are in condition for allowance.

Dependent Claims

Dependent claims 2-6 and 8-12 have been amended merely to place them in better form.

All dependent claims are in condition for allowance due to their dependency from allowable independent claims, or due to the additional novel features set forth therein.

All pending claims are now in condition for allowance.

Accordingly, reconsideration and withdrawal of the rejections under 35 U.S.C. § 103(a) are respectfully requested.

CONCLUSION

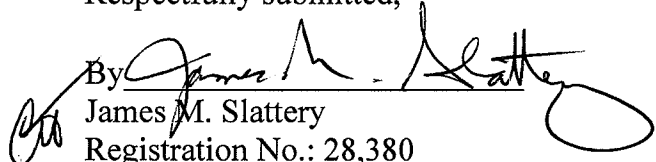
All of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. It is believed that a full and complete response has been made to the outstanding Office Action, and that the present application is in condition for allowance.

If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, he is invited to telephone Carl T. Thomsen (Reg. No. 50,786) at (703) 208-4030(direct line).

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§1.16 or 1.17, particularly extension of time fees.

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Respectfully submitted,

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